Energy Service Company Perspective on Distributed Generation

The Transitioning Energy Industry Panel

ATS Annual Meeting

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ONSITE ENERGY

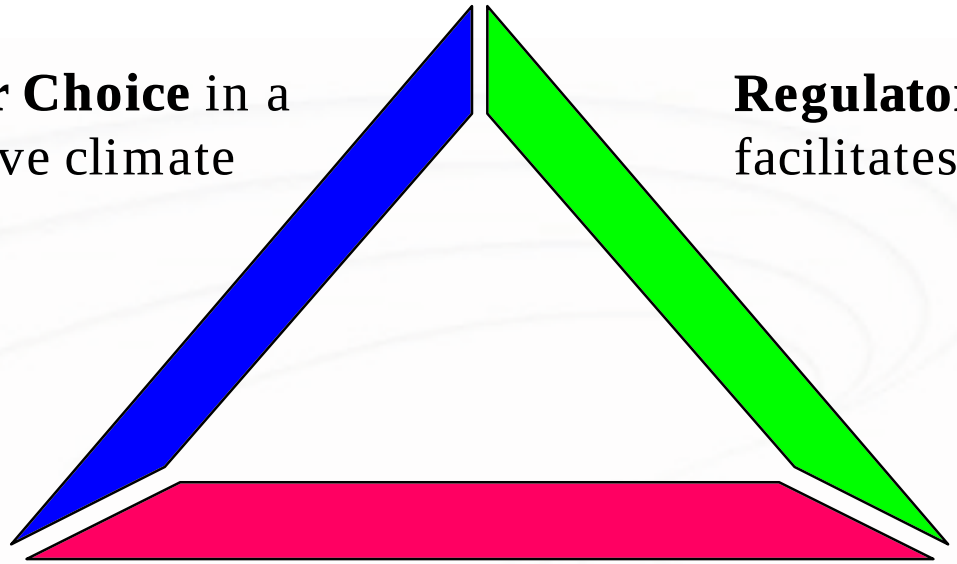
Onsite Energy Corporation

- Independent, Nationally Accredited Energy Service Company (ESCO)
- Full Service Offering with International Presence
- Company Origins in Co-generation and On-site Power
- Active in Distributed Generation and Combined Heat and Power

The New Energy Market

Customer Choice in a competitive climate

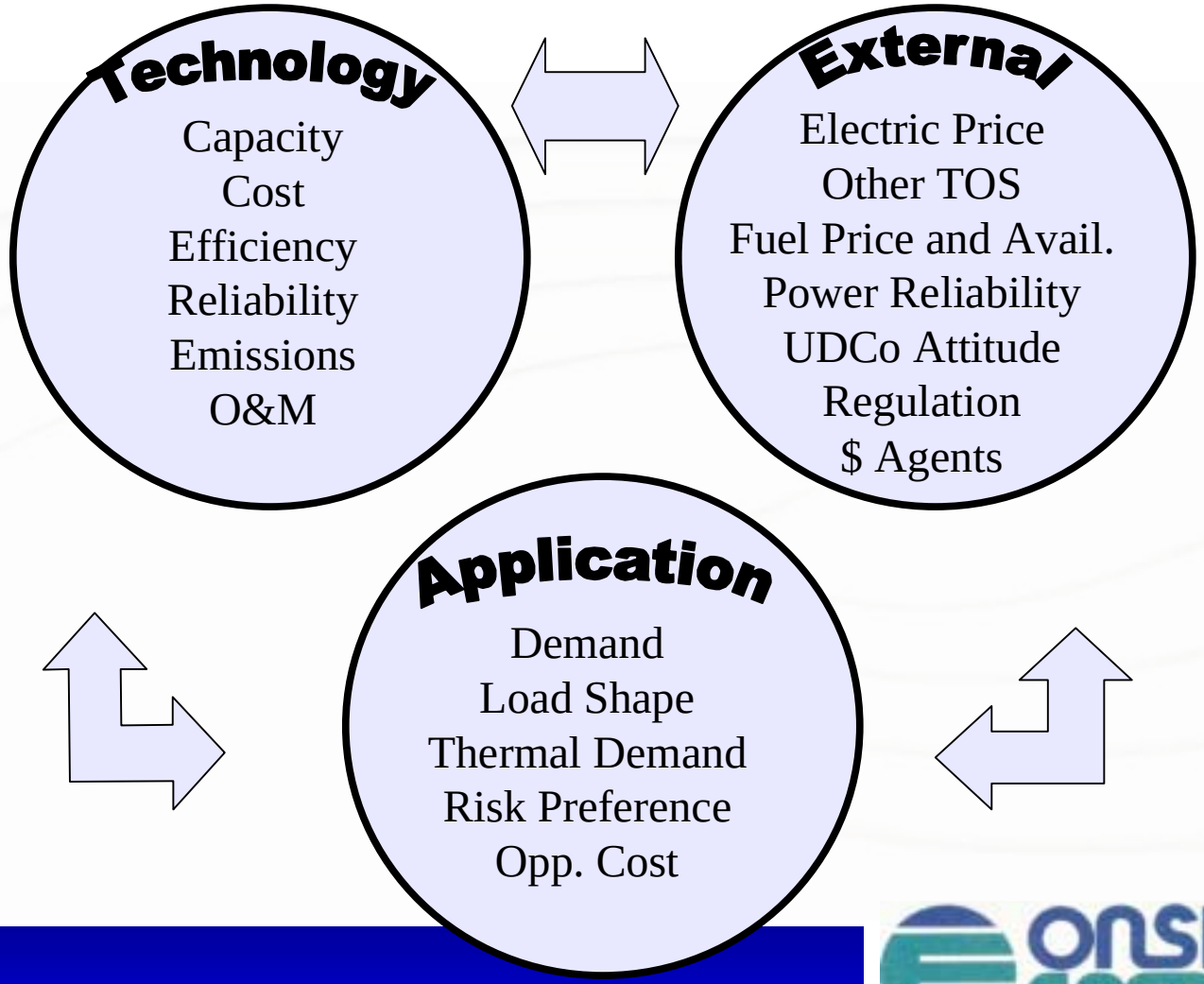
Regulatory Change facilitates competition



Product Portfolio enables customer & provider choices

The basis of the new business is providing value with customer-focused solutions

Building an Economic Model



ESCO Role

- Develop, design, and finance energy efficiency projects
- Install and maintain equipment
- Measure and verify energy savings
- Assume risk that project will save the amount of energy guaranteed

ESCO compensation is based on customer savings via performance-based contracting. So, it is technology neutral.

Value of DG to ESCO

- Energy Efficiency
- Distributed (on-site) generation with clean gas turbines, advanced natural gas engines, microturbines, fuel cells and renewables
- Combined Heat and Power
- Customer Peakshaving
- Portfolio approach that manages energy costs for the consumer

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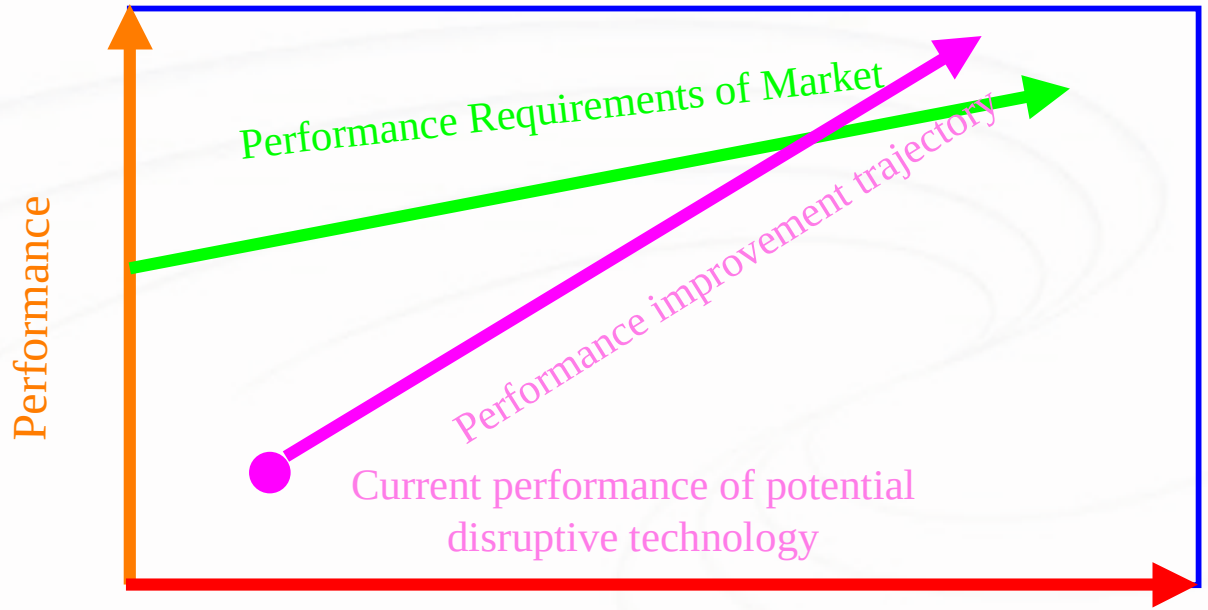
Are DG Technologies Disruptive Technology?



The competing performance options include both the electric grid and other DG options.

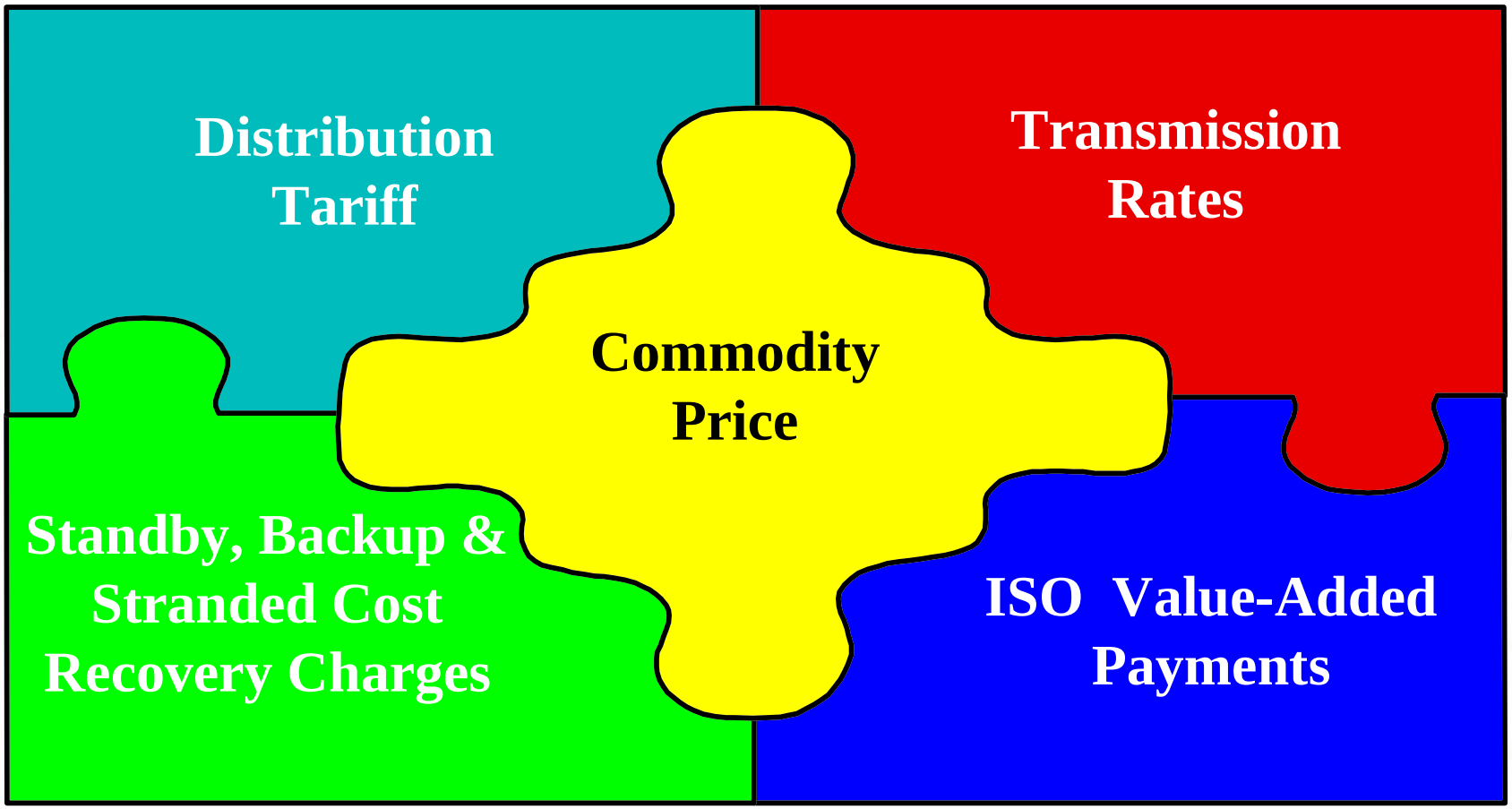
Source: Bower and Christensen

What Customers Want

- A packaged solution that offers
  - Energy Cost Savings
  - Enhanced Reliability
  - Environmental Responsibility
  - Competitive Installed Cost
  - Low Risk Profile
    - Guarantees
    - No uncertainties

Technology is embedded in the solution, but for the most part incidental to the value seen by customers

DG in a Restructured Market -The Electricity Price Puzzle-



Standby / Back-up Power Issues

- Needed for scheduled maintenance and unplanned outages
- Rates often include high facility or demand charges
- High rates can significantly impact project economics

Example Standby/Back-up Charges

Annual Back-up/Standby Charges	Case 1	Case 2
Outage Hours	456	456
Summer Outage Hours	190	190
Winter Outage Hours	266	266
Summer Outage Energy Charge	$14,668	$14,668
Winter Outage Energy Charge	$14,613	$14,613
Summer Outage Demand Charge	$121,300	
Winter Outage Demand Charge	$52,955	
Standby Charge	(Included in above)	$45,000
Total Back-up/Standby Charges	$203,536	$74,281

Impact on Project Economics

Annual Costs	Grid Purchase	Case 1	Case 2
Capital Carrying Charge		$130,000	$130,000
Fuel Cost		$157,320	$157,320
Cogeneration Heat Credit		($78,660)	($78,660)
O&M Cost		$62,928	$62,928
Back-up/Standby Power		$203,536	$74,281
Total Cost	$441,309	$475,124	$345,869
Total Electric Generated (kWh)		5,244,000	5,244,000
Total Electric Bought (kWh)	5,847,000	603,000	603,000
Average Power Cost ($/kWh)	$0.0755	$0.0906	$0.0660

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Standby / Back-up Power Needs

- Alternative rate methodologies that reflect the diversity of distributed generation resources
- Special provisions for planned maintenance performed off-peak
- Issues being examined in New York, California and Arizona

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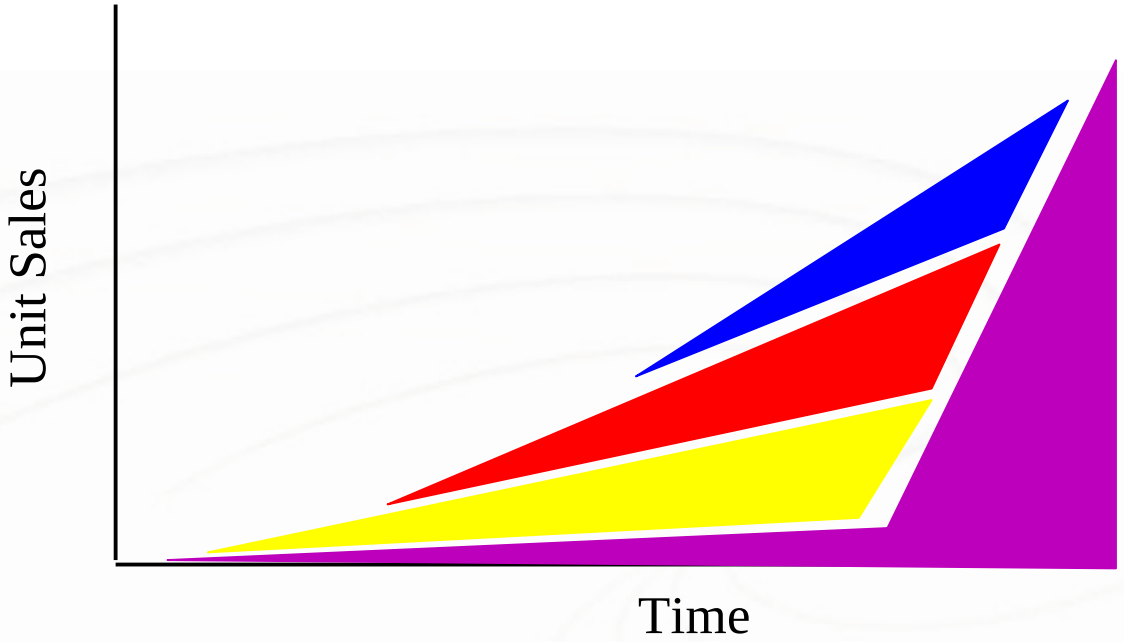
Stranded Cost Issues

- Transition charges and exit fees on on-site generation quickly kill project economics
- Customer reductions from energy efficiency usually exempt from such charges
- Some states exempt on-site generation as well
  - Massachusetts (CHP), New Jersey, Illinois, Ohio, Virginia, Michigan

Procedural/Permitting Issues

- Multiple agency approvals may be needed
- Time-consuming permit process
  - Unclear project description
  - Case-by-case evaluation of project
- Lack of technology information and universally accepted standards
  - Debates over control technology requirement
- Public concerns may be raised

Likely Projection for DG Products



DG will offer a new value proposition in new and unexpected niches. Performance improvements are made, production costs are reduced due to volume, business transactions are more efficient, regulatory changes are made, and DG eventually finds wide market acceptance

DG Offers Value for Growth Industries

- New Demand for Power from “Internet Economy”
- Current Power Grid may not Provide Power Needs of the new Internet-Based Economy
  - E-procurement, web-based enterprises and other IT industries require 99.9999% power reliability
  - “Growth in internet-quality power is expected to account for 40% of the increase in total US power demand by 2010” - BOA Securities

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Market Opportunities

- Commercial/Industrial
  - Food, Manufacturing & Assembly, Paper, Chemicals
  - Universities, Schools, Hospitals, Federal Facilities
- Favorable Customer Profile
  - Significant & Coincident Electric and Thermal Loads for CHP
  - Power Quality & Reliability Sensitive
  - Environmental Stewardship
  - Progressive Investment Approach
- Favorable Regional Environment
  - Electric and Gas Rates
  - Capacity and T&D Constraints
  - Utility and Regulatory Attitudes

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Commercial/Institutional Market

- Significant potential exists
- Market penetration to-date is extremely low
- Majority of existing capacity is in larger systems (>20 MW)
- Majority of technical potential is in smaller sizes (< 1 MW)
- Application of advanced technologies that use thermal energy will expand market potential
  - Heat-activated cooling
  - Thermally regenerated desiccant

Industrial Market

- Significant potential remains at existing industrial facilities
- Majority of remaining potential is within industries that have traditionally employed CHP
- Project development to date has been focused on large systems
  - 90% of existing industrial capacity > 20 MW
- Small systems represent a large untapped market
  - <1% market penetration for systems < 4 MW

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GRI 2000 Baseline Projection: DG Capacity (MW)

	1998	2000	2005	2010	2015
Industrial Cogeneration (<25 MW)	5,430	5,837	7,609	8,684	9,369
Industrial Electric Generation	13,031	14,230	17,017	19,783	23,018
Commercial Cogeneration (<25 MW)	1,474	1,615	2,205	3,162	4,315
Commercial Electric Generation	7,398	7,818	9,107	10,961	14,040
Other DG	7	24	707	2,620	5,616
TOTALS	27,340	29,524	36,645	45,210	56,358
GAS DEMAND (Trillion Btu)	1166.5	1207.1	1353.0	1553.8	1878.0

Critical Challenges

- Electric Utility Acceptance
  - Standby/Back-up Tariffs
  - Process Intensive
- Future Uncertainty in Energy Markets
- Environmental Siting/Permitting
- Non-core Business Investment for Some Customers

Top Actions

- Non-discriminatory Energy Based Tariffs for Backup Power and T&D Access
- Win-Win Ratemaking for Utility Distribution Companies
- Valuation of Transmission Benefits by ISOs
- Investment Incentives (i.e., Short Depreciation Schedules, Tax Credits, etc.)
- Environmental Regulations that Recognize DG/CHP Benefits

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Conclusions

- Market Conditions and Trends Favor DG
  - Technologies, Environment, Customer Choice, Managing Energy Costs
- ESCOs & ESPs Providing Alternative Paths to Market
- Current Electric Utility Resistance and Regulatory Issues Hinder Widespread Implementation
- Niche Markets Evolving Around Specific DG Features
- State Restructuring Actions Influence DG Market Development
- Once Enabling Market Drivers Adequately Evolve, DG Implementation will be Robust

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